POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077 **Reviewer: Sarraino**

This updated assessment is based on releases in Post-Focus Draft Revision 1, dated 07/02/2018, with the exception of the predicted land application of fertilizer release in the USE scenario. For this particular release, submitter-provided application rate information was used instead to run the pesticide model, PWC. PWC predicts surface water concentrations by considering runoff from a field into a generic farm pond. The results of this PWC run are provided in Table 2, while the inputs used for this separate run are included at the end of this exposure report.

EFAST Results Table: Dose, Concentration, and Days Exceeded Results Summary

Exposure Scenario[1]	Water						Landfill	Stack Air		Fugitive Air	
Release activity(ies)[2]; exposure calculation(s)[3]	Drinking Water		Fish Ingestion		7Q10[4] CC = 280	PDM Days Exceeded	LADD	ADR (24-hr conc.)	LADD (Annual conc.)	ADR (24-hr conc.)	LADD (Annual conc.)
	ADR	LADD	ADR	LADD							
	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	µg/l	# Days	mg/kg/day	mg/kg/day ($\mu g/m^3$)	mg/kg/day ($\mu g/m^3$)	mg/kg/day ($\mu g/m^3$)	mg/kg/day ($\mu g/m^3$)
PROC: Max ADR: max acute eco	**8.26E-03**	---	**7.66E-04**	---	**3.74E+02**	---	---	---	---	---	---
PROC: PDM1	---	---	---	---	**5.15E+01**	**0**	---	---	---	---	---
PROC: Max LADD	---	**1.79E-05**	---	**3.87E-07**	---	---	---	---	---	---	---
USE: Max ADR	**5.86E-03**	---	**2.83E-04**	---	**2.83E+02**	---	---	---	---	---	---
USE: Max LADD	---	**1.63E-06**	---	**3.52E-08**	---	---	---	---	---	---	---

[1] Exposure scenario titles consist of release activity followed by exposure calculation abbreviation.
[2] Release activities are from engineering report's Manufacturing (Mfg), Processing (Proc) and Use release activity labels. Multiple release activities are combined in one exposure scenario if their releases occur at same location.
[3] Exposure calculations are Acute Dose Rate (ADR), Lifetime Average Daily Dose (LADD), and Probabilistic Dilution Model (PDM). There may be one, two, or all three exposure calculations per exposure scenario. CC is the aquatic concentration of concern.
[4] This column displays concentration values for the 7Q10 streamflow, which is defined as the average daily streamflow of the seven consecutive days of lowest flow within a ten year period.

Remarks: PV > [redacted]
PROC – [redacted]
USE – [redacted]

PWC Results Table: Estimated Environmental Concentrations (µg/L) based on Application Rate of 0.08 kg/ha and Frequency of Twice a Year*

Peak (1-in-10 yr)	**51.6**
4-day Avg (1-in-10 yr)	51.6
21-day Avg (1-in-10 yr)	51.5
60-day Avg (1-in-10 yr)	51.5
365-day Avg (1-in-10 yr)	50.7
Entire Simulation Mean	27.9

*Frequency based on submitter-provided information. The engineering report assumed **4 applications per year, which would result in overall and peak environmental concentrations of 52.1 and 96.5 µg/L, respectively.**

Results Table: Exposure Based (XB)/Persistent (P2B2) Criteria

Parameter	Exp Based	Persistent	Exceedance Value
Drinking (Surface) Water Dose (mg/kg/day)	No	NA	
Fish Ingestion Dose (mg/kg/day)	No	NA	
Inhalation Dose (mg/kg/day)	No	NA	
Groundwater Dose (mg/kg/day)	No	NA	
Surface Water Release After Treatment (kg/yr)	Yes	NA	[redacted]
Total Release After Treatment (kg/yr)	Yes	NA	[redacted]
Consumer Use?	No		

Fate test recommendations?: (default is NA)

SCALING FACTORS FOR DRINKING WATER DOSE

Age Group	Scaling Factor for ADR	Scaling Factor for ADD
Adults	1.0	1.0
Birth to 1	**4.17**	**11.49**
1-2	1.63	3.91
3-5	1.24	3.10
6-10	1.12	2.51
11-15	0.83	1.77
16-21	0.79	1.55
Pregnant	1.02	2.07
Lactating	1.31	3.84

Scaling factors for ADR are based on the ratio of 95th percentile drinking water intake/body weight for each age group compared to the 95th percentile drinking water intake/body weight ratio for adults from Table 3-1 of the 2011 edition of the Exposure Factors Handbook.

Scaling factors for age specific ADD are based on the ratio of the mean drinking water intake/body weight for each age group compared to the mean drinking water intake/body weight ratio for adults from Table 3-1 of the 2011 edition of the Exposure Factors Handbook.

Note, default LADD values are based on assumption that 33 years of lifetime exposure occurs in adulthood. If that exposure starts at birth, the LADD increases by 10% (1.1). However, central tendency duration (13 years) and consideration of age specific adjustment factors (ADAF) can be considered on an as needed basis (LADD Scaling factors range from 0.6 to 4.1).

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1 Assessor: Sarraino/SS

ENVIRONMENTAL RELEASES

Scenario#:1 Number of Release Sites: 500.

Release Activity: PROC: Max ADR, acute eco

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	[redacted]	[redacted]	[redacted]
Per Site Release:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 1 [redacted] RELEASE ACTIVITY:PROC: Max ADR, acute eco

SIC-CODE DESCRIPTION: [redacted]

SIC-CODE (S): [redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
0.00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER

PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	288.00	123.84	78.18	66.05	10.07	23.42	37.09	43.91
ALL	10	39.60	13.29	7.76	7.57	73.23	218.21	373.71	383.09

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES

Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	2.12E-06	1.54E-05	mg/kg/day	4.60E-08	3.34E-07	mg/kg/day
$LADC_{pot}$	1.63E-04	1.19E-03	mg/L	4.90E-04	3.57E-03	mg/kg
Acute						
ADR_{pot}	8.87E-04	8.26E-03	mg/kg/day	1.05E-04	7.66E-04	mg/kg/day

SIC Code Comments:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1 Assessor:

ENVIRONMENTAL RELEASES

Scenario#:2 Number of Release Sites: 500.

Release Activity: PROC: PDM

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	N/A	N/A	N/A
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	0.00/0.00	N/A	N/A
Per Site Release:	[redacted]	N/A/0.00	N/A	N/A
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 2 Number of Sites [redacted] RELEASE ACTIVITY:PROC: PDM

SIC-CODE DESCRIPTION: [redacted]

[redacted]S): subset of 4952 EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
0.00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER

PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	288.00	123.84	78.18	66.05	1.39	3.23	5.12	6.06
ALL	10	39.60	13.29	7.76	7.57	10.10	30.10	51.55	52.84

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES

Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	6.28E-07	4.57E-06	mg/kg/day	1.36E-08	9.88E-08	mg/kg/day
$LADC_{pot}$	4.83E-05	3.51E-04	mg/L	1.45E-04	1.05E-03	mg/kg
Acute						
ADR_{pot}	1.22E-04	1.14E-03	mg/kg/day	1.45E-05	1.06E-04	mg/kg/day

SIC Code Comments:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1

SIC CODE EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 2 RELEASE ACTIVITY: PROC: PDM

SIC CODE DESCRIPTION: [redacted]

ASSOCIATED SIC CODES: [redacted]

SIC CODE RESULTS

COC (µg/L)	Percent of Year COC Exceeded	Number of Days COC Exceeded	Release days/year	Loading (kg/site/day)	Waste Water Treatment (%)	High/Avg Analysis
280.00	0	0	[redacted]	0.40	0.00	High

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1 Assessor:

ENVIRONMENTAL RELEASES

Scenario#:3 Number of Release Sites [redacted]

Release Activity: PROC: Max LADD

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	N/A	N/A	N/A
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	0.00/0.00	N/A	N/A
Per Site Release:	[redacted]	N/A/0.00	N/A	N/A
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 3 [redacted] RELEASE ACTIVITY:PROC: Max LADD

SIC-CODE DESCRIPTION: [redacted]

SIC-CODE (S): [redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER

PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	288.00	123.84	78.18	66.05	N/A	N/A	N/A	N/A
ALL	10	39.60	13.29	7.76	7.57	N/A	N/A	N/A	N/A

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES

Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	2.46E-06	1.79E-05	mg/kg/day	5.32E-08	3.87E-07	mg/kg/day
$LADC_{pot}$	1.89E-04	1.38E-03	mg/L	5.67E-04	4.13E-03	mg/kg
Acute						
ADR_{pot}	N/A	N/A	mg/kg/day	N/A	N/A	mg/kg/day

SIC Code Comments:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1 Assessor:

ENVIRONMENTAL RELEASES

Scenario#:4 [redacted]

Release Activity: USE: Max ADR, acute eco

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	N/A	N/A	N/A
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	0.00/0.00	N/A	N/A
Per Site Release:	0.30	N/A/0.00	N/A	N/A
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 4 [redacted] RELEASE ACTIVITY:USE: Max ADR, acute eco

SIC-CODE DESCRIPTION: [redacted]

SIC-CODE (S): [redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER

PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	125.56	44.02	26.80	22.53	2.39	6.82	11.19	13.32
ALL	10	11.11	1.94	1.06	0.96	27.00	154.64	283.02	312.50

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES

Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	1.44E-07	1.63E-06	mg/kg/day	3.12E-09	3.52E-08	mg/kg/day
$LADC_{pot}$	1.11E-05	1.25E-04	mg/L	3.32E-05	3.76E-04	mg/kg
Acute						
ADR_{pot}	2.58E-04	5.86E-03	mg/kg/day	2.50E-05	2.83E-04	mg/kg/day

SIC Code Comments:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1 Assessor:

ENVIRONMENTAL RELEASES

Scenario#:5 [redacted]

Release Activity: USE: Max LADD

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	N/A	N/A	N/A
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	[redacted]	N/A	N/A
Per Site Release:	[redacted]	[redacted]	N/A	N/A
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

POST FOCUS EXPOSURE REPORT

Chemical ID: P-18-0077.exp1

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 5 [redacted] RELEASE ACTIVITY:USE: Max LADD

SIC-CODE DESCRIPTION: [redacted])

SIC-CODE ([redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	125.56	44.02	26.80	22.53	N/A	N/A	N/A	N/A
ALL	10	11.11	1.94	1.06	0.96	N/A	N/A	N/A	N/A

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	1.44E-07	1.63E-06	mg/kg/day	3.12E-09	3.52E-08	mg/kg/day
$LADC_{pot}$	1.11E-05	1.25E-04	mg/L	3.32E-05	3.76E-04	mg/kg
Acute						
ADR_{pot}	N/A	N/A	mg/kg/day	N/A	N/A	mg/kg/day

SIC Code Comments:

[redacted]

USDA. 2018. Farms and Land in Farms 2017 Summary. National Agricultural Statistics Service, United States Department of Agriculture.

PWC available at https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/pesticide-water0calculator-version-150-and-152-user

Additional modeling inputs used in PWC are shown below. The MS corn standard scenario was found to be most conservative, so results from that scenario are the ones presented in this exposure report.

Summary of Model Inputs for Duromide.

Scenario	MScornSTD
Cropped Area Fraction	1
Koc (ml/g)	10
Water Half-Life (days) @ 0 °C	0
Benthic Half-Life (days) @ 0 °C	0
Photolysis Half-Life (days) @ 45 °Lat	0
Hydrolysis Half-Life (days)	0
Soil Half-Life (days) @ 0 °C	0
Foliar Half-Life (days)	0
Molecular Weight	239.23
Vapor Pressure (torr)	0.000003
Solubility (mg/l)	35
Henry's Constant	0.0

Assumed Application Schedule for Duromide.

Date (Mon/Day)	Type	Amount (kg/ha)	Eff.	Drift
1/1	Ground	0.08	1	0
4/1	Incorporated to cm	0.08	1	0

PWC Yearly Peak Concentrations